

WHAT IS CLAIMED IS:

1. A scanning microscope comprising:
a laser, an optical means for imaging light generated by the laser onto a specimen and an optical component positioned between the laser and the optical means, wherein the light generated by the laser passes through the optical component whereby the optical component spectrally spreads the light passing through.
2. The scanning microscope as defined in Claim 1, wherein the optical component is photonic band-gap material.
3. The scanning microscope as defined in Claim 2, wherein the photonic band-gap material is configured as a light-guiding fiber.
4. The scanning microscope as defined in Claim 1, wherein the optical component is configured as a tapered light-guiding fiber.
5. The scanning microscope as defined in Claim 1, wherein the laser is a pulsed laser.
6. The scanning microscope as defined in Claim 1, wherein means for attenuating at least a portion of at least one wavelength of the light emerging from the optical component is arranged after the optical component.
7. The scanning microscope as defined in Claim 6, wherein the means for attenuating consists essentially of a spectrally selective filter, a dichroic filter, an acoustooptical tunable filter (AOTF), acoustooptical deflector (AOD), an LCD attenuator.

8. The scanning microscope as defined in Claim 1, further comprising:
means for light output stabilization configured as a control loop.
9. A confocal scanning microscope comprising:
a laser, an optical means for imaging light generated by the laser onto a specimen, a detector for receiving light coming from the specimen, an optical component positioned between the laser and the optical means, wherein the light generated by the laser passes through the optical component, whereby the optical component spectrally spreads the light passing through and an illumination pinhole through which the specimen is illuminated by the light emerging from the optical component.
10. The confocal scanning microscope as defined in Claim 9, wherein the optical component is photonic band-gap material.
11. The scanning microscope as defined in Claim 10, wherein the photonic band-gap material is configured as a light-guiding fiber.
12. The confocal scanning microscope as defined in Claim 11, wherein the light-guiding fiber defines an exit end which serves as the illumination pinhole.
13. The confocal scanning microscope as defined in Claim 9, wherein the optical component is configured as a tapered light-guiding fiber.
14. The confocal scanning microscope as defined in Claim 13, wherein the tapered light-guiding fiber defines an exit end which serves as the illumination pinhole.
15. The confocal scanning microscope as defined in Claim 9, wherein the laser is a pulsed laser.

16. The confocal scanning microscope as defined in Claim 9, wherein means for attenuating at least a portion of at least one wavelength of the light emerging from the optical component is arranged after the optical component.
17. The confocal scanning microscope as defined in Claim 16, wherein the means for attenuating consists essentially of a spectrally selective filter, a dichroic filter, an acoustooptical tunable filter (AOTF), acoustooptical deflector (AOD), an LCD attenuator.
18. The confocal scanning microscope as defined in Claim 9, further comprising: means for light output stabilization configured as a control loop.
19. An illumination device for a confocal scanning microscope comprising: a laser which has a light exit opening, an optical component made of photonic band-gap material which is mounted at the light exit opening.
20. The illumination device as defined in Claim 19, wherein the photonic band-gap material is configured as a light-guiding fiber.
21. The illumination device as defined in Claim 20, wherein the light-guiding fiber defines an exit end which serves as the illumination pinhole.
22. The illumination device as defined in Claim 19, wherein the laser is a pulsed laser.
23. An illumination device for a confocal scanning microscope comprising: a laser which has a light exit opening, a tapered light-guiding fiber, which is mounted at the light exit opening.

24. The illumination device as defined in Claim 23, wherein the tapered light-guiding fiber defines an exit end which serves as the illumination pinhole.
25. The illumination device as defined in Claim 23, wherein the laser is a pulsed laser.
26. A scanning microscope comprising:
a pulsed laser, an optical means for imaging light generated by the pulsed laser onto a specimen and a tapered light-guiding fiber positioned between the pulsed laser and the optical means, wherein the light generated by the pulsed laser passes through the tapered light-guiding fiber whereby the tapered light-guiding fiber spectrally spreads the light passing through.
27. The scanning microscope as defined in Claim 26, wherein the scanning microscope is a confocal scanning microscope.
28. A scanning microscope comprising:
a pulsed laser, an optical means for imaging light generated by the pulsed laser onto a specimen and a light-guiding fiber, made of photonic band-gap material, positioned between the pulsed laser and the optical means, wherein the light generated by the pulsed laser passes through the light-guiding fiber whereby the light-guiding fiber spectrally spreads the light passing through.
29. The scanning microscope as defined in Claim 28, wherein the scanning microscope is a confocal scanning microscope.
30. A scanning microscope comprising:
a pulsed laser, an optical means for imaging light generated by the pulsed laser onto a specimen, an optical component positioned between the pulsed laser and the optical means, wherein the light generated by the pulsed laser

passes through the optical component whereby the optical component spectrally spreads the light passing through and means arranged after the optical component for attenuating at least a portion of at least one wavelength of the light emerging from the optical component.

31. The scanning microscope as defined in Claim 30, wherein the optical component is photonic band-gap material.
32. The scanning microscope as defined in Claim 31, wherein the photonic band-gap material is configured as a light-guiding fiber.
33. The scanning microscope as defined in Claim 30, wherein the optical component is configured as a tapered light-guiding fiber.

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